

[54] CHARACTER AND GRAPHICS DISPLAY SYSTEM

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[71] Applicant: HITACHI LTD (JP)

CHARACTER AND GRAPHICS DISPLAY SYSTEM

The present invention relates to character and graphics display systems, and more particularly to a character and graphics display system which is suited to facilitate reception and display processing in a character and graphics information system such as teletext or videotex.

In a display circuit which displays characters and graphics and which is used in, for example, a personal computer, a high-speed writing system which includes display memories of dot-by-dot coloring composed of three memory devices for displaying the three primary colors of red, green and blue respectively and in which the respective display memories are provided with color data registers so as to simultaneously write data into the plurality of display memories is disclosed in the official gazette of Japanese Patent Application Laid-Open No. 187996/1983 (corresponding to European Patent Application Publication No. 0093954).

However, in a case where the personal computer having the display circuit of such a high-speed writing system is used as the terminal of, for example, the videotex with the intention of performing display, the processing of writing data into the display memories becomes complicated as compared with the processing of the display circuit of a terminal for exclusive use comprising a graphics data memory and a color data memory, because character and graphics data are composed of parts concerning graphics data and parts of color data which consist of foreground color designation for coloring dots having the graphics data of "1" and background color designation for coloring dots having the graphics data of "0". More specifically, with the prior-art display circuit, on account of a memory plane arrangement for each of the three primary colors of red, green and blue, the writing of the character and graphics data composed of the graphics data and the color data requires the two display processing operations of the first writing of foreground color data in which the color data of foreground colors are written into the color data registers, whereupon the graphics data are written into the display memories, and the second writing of background color data in which the contents of the color data registers are rewritten into the color data of background colors, whereupon inverted graphics data obtained by inverting the graphics data are written into the display memories in superimposed fashion. This has led to the problem that a long time is needed for the display processing, so the display speed becomes lower than in the direct writing processing of a display memory arrangement made up of the graphics data memory and the color data memory as in the exclusive terminal.

An object of the present invention is to solve the problem of the prior art described above, and to provide a character and graphics display system which can raise the speed of the writing processing of character and graphics data composed of graphics data and color data.

In order to accomplish such object, according to the present invention, a character and graphics display system having a plurality of display memories, display memory reading means to read out character and graphics data written in the display memories, and picture signal conversion means to convert the read-out data into picture signals; comprises color data recording and holding means to record and hold a plurality of sorts of color data of characters and graphics; a plurality of decode circuits which are disposed in correspondence with the respective display memories and which generate control signals corresponding to said display memories respectively on the basis of the plurality of sorts of color data stored in said color data recording and holding means; and a plurality of graphics data conversion circuits which, in response to the control signals delivered from the corresponding decode circuits, convert graphics data of the characters and graphics into data corresponding to said display memories respectively and write the converted graphics data into the corresponding display memories respectively.

According to the present invention, even in display memories of an arrangement of planes expressive of different colors such as red, green and blue unlike display memories of an arrangement composed of the graphics data memory and the color data memory, character and graphics data having foreground colors and background colors designated can be simultaneously converted into data to be written into the display memories of the respective planes, merely by the setting of the color data in the

color data recording and holding means and the processing of writing the graphics data, so that enhancement in the speed of the writing into the display memories can be realized.

In the drawings:

Fig.1 is a block diagram showing an embodiment of a character and graphics display system according to the present invention;

Fig.2 is a detailed block diagram of a graphics data select and control circuit in Fig.1;

Fig.3 is a block diagram showing an example of a data conversion circuit in Fig.2; and

Figs. 4A and 4B are diagrams showing an example display of a character graphics and an example of data written in display memories, respectively.

Now, an embodiment of the present invention will be described in detail. Fig.1 is a block diagram showing one embodiment of a character and graphics display system according to the present invention. In Fig.1, numeral 1 designates a micro processing unit (hereinbelow, abbreviated to "MPU"), and numerals 2 and 3 designate bus lines for the addresses and data thereof respectively. Numeral 4 indicates a display timing signal generator for display read, numeral 5 a display address signal line, and numeral 6 a display cycle signal line for switching the display read and MPU access. Numeral 7 indicates an address switch circuit, and numeral 8 a switched address signal line therefor. Shown at numeral 9 is an address select circuit. Display memories 12 are composed of four planes 12R, 12G, 12B and 12Z. Shown at numeral 13 is a color data register. Numerals 10 and 11 denote selected signal lines for the display memories 12 and the color data register 13, respectively. Numeral 14 denotes a signal line for the output data of the color data register 13, numeral 15 a graphics data select and control circuit, and symbols 16R, 16G, 16B and 16Z signal lines for data to be written into the display memories 12R, 12G, 12B and 12Z and for data read out from these display memories, respectively. Symbols 17R, 17G, 17B and 17Z denote parallel/serial converters which hold the read-out data from the display memories and convert them into serial data (signal lines 18R, 18G, 18B and 18Z), respectively. Shown at numeral 19 is a regrettably memory whose address inputs are the serial data and which is called a "color look up table". Numeral 21 indicates a D/A converter by which output data (signal line 20) from the color look up table 19 are converted into analog RGB three-primary-color signals (signal line 22), and numeral 23 a color CRT display unit.

Fig.2 is a detailed diagram of the graphics data select and control circuit 15 in Fig.1. Symbols 31R, 31G, 31B and 31Z denote decode circuits, symbols 32R, 32G, 32B and 32Z decoded output signal lines for the corresponding decode circuits, and symbols 33R, 33G, 33B and 33Z data conversion circuits, and these constituents are disposed in numbers of four respectively.

Now, the operation of the character and graphics display system shown in Figs. 1 and 2 will be described. The display memories 12 in Fig.1 are composed of the four planes 12R, 12G, 12B and 12Z which store data R, G and B representative of red, green and blue and data Z indicative of either a top intensity or a half intensity, respectively. They store character and graphics data for each of picture elements which consist of 256 dots in a lateral direction and 192 lines in a vertical direction as illustrated in Fig.4A.

As an example of the character and graphics data, there will be explained a case, as indicated in Fig.4A, the character graphics of a Chinese character 41 is displayed with its foreground color being "yellow" and its background color being "half intensity green". In a character and graphics data system such as videotex, color data including a foreground color and a background color and also graphics data (in case of code transmission, graphics data from a character graphics ROM) are usually transmitted as in this example. The MPU 1 disposed in a terminal for transmitting and receiving such data records the foreground color of "yellow" and the background color of "half intensity green" into the color data register 13 beforehand, and subsequently performs the processing of writing the graphics data of the Chinese character 41 into the display memories 12.

The color output data (signal line 14) recorded in the color data register 13 are input to the graphics data select and control circuit 15, in which the graphics data on the data bus 3 of the MPU 1

are selected and controlled depending upon the combination of the color data of the foreground color and the background color and are converted into data to be written into the respective color data planes of the display memories 12. The graphics data select and control circuit 15 has a circuit arrangement shown in Fig.2, which is composed of the four decode circuits 31R, 31G, 31B and 31Z each decoding the 2 bits of the combination in bit unit between the color data of the foreground color and the background color, and the data conversion circuits 33R, 33G, 33B and 33Z each producing the data to be written into the memory of the plane on the basis of the corresponding output signal 32R, 32G, 32B or 32Z. The four decode circuits 31R, 31G, 31B and 31Z decode the corresponding ones of the four 2-bit combinations between the output signals of the foreground color and the background color, each consisting of 4 bits, from the color data register 13, and they operate during a display read cycle in accordance with the cycle signal 6 for switching the display read and the MPU access. The data conversion circuits 33R, 33G, 33B and 33Z convert a graphics data signal (indicated by Y) on the data bus 3 of the MPU I into the corresponding ones of the four groups of data R, G, B and Z to be written into the corresponding planes of the display memories 12, in accordance with the respective output signals 32R, 32G, 32B and 32Z of the decode circuits. Fig.3 shows the practicable circuit arrangement of each of the data conversion circuits 33R, 33G, 33B and 33Z, and exemplifies the circuit 33R which converts the graphics data on the data bus 3 into the data to be written into the display memory 12R of the red data R. This circuit is composed of four controlled buffers and one inverter. The controlled buffers 331 and 332 have an output of low level "0" and an output of high level "1" at all times, respectively. The controlled buffer 333 delivers the input signal Y as it is. The controlled buffer 334 furnished with the Inverter 335 at its input end delivers the inverted signal \bar{Y} of the signal Y. The control terminals of these buffers are respectively connected to the decode output terminals 0, 1, 2 and 3 of the decode circuit 31R, and one of the terminals 0, 1, 2 and 3 becomes the high level "1" in accordance with the decoded result of the decode circuit 31R. The output of the buffer whose control terminal has been supplied with "1" becomes the output signal R of the data conversion circuit 33R.

This circuit 33R operates as follows. When the decode output 32R of the decode circuit 31R is "0", the write data bits become "0"; when the former is "1", the latter becomes the data on the data bus as it is; when the former is "2", the latter becomes the inverted value of the data on the data bus; and when the former is "3", the latter becomes "1".

Table 1 lists the data to-be-written which are delivered from the data conversion circuit 33R in Fig.3 by converting the graphics data Y on the data bus 3, in correspondence with the decode output signals of the decode circuit 31R as well as the 2-bit combinations of the foreground color (FGC) and the background color (BGC) recorded in the color data register 13.

The other data conversion circuits 33G, 33B and 33Z are the same in arrangement as the circuit 33R shown in Fig.3, and operate similarly thereto.

Table 1

Combination between Foreground Color (FGC) and Background Color (BGC)		Output Signal of Decode Circuit 31R	Data Bits to-be-Written obtained by Converting Graphics Data Y (Output Signal of Data Conversion Circuit 33R)
BGC	FGC		
0	0	0	00000000
0	1	1	00110110 (=Y)
1	0	2	11001001 (= \bar{Y})
1	1	3	11111111

As regards the example shown in Fig.4A, since the foreground color is "yellow" and the background color is 'green', the graphics data left intact is written into the display memory 12R of the

red (R) plane, data with its all bits being "1" is written into the display memory 12G of the green (G) plane, data with its all bits being "0" is written into the display memory 12B of the green (G) plane, and the inverted data of the graphics data is written into the display memory 12Z of the "Z" plane, as illustrated in Fig.4B.

The character graphics data in plane unit organization written into the display memories 12 in this manner are read out in accordance with the display address (signal line 5) from the display timing signal generator 4 and are converted into the picture signals of the three primary colors R, G and B via the parallel/serial conversion circuits 17R, 17B, 17B and 17Z, color look up table 19 and D/A conversion circuit 21. Then, the color CRT display unit 23 can display the Chinese character graphics with the foreground color designated "yellow" and the background color designated "green".

As thus far described, according to the embodiment of the present invention, even in the display memories -of the arrangement of the planes expressive of, for example, red, green and blue unlike the display memories of the arrangement composed of the graphics data memory and the color data memory, character and graphics data having foreground colors and background colors designated can be simultaneously converted into data to be written into the display memories of the respective planes, merely by the setting of the color data in the register and the processing of writing the graphics data into the display memories, so that enhancement in the speed of the writing into the display memories can be realized.

While the embodiment of the present invention has referred to the case of including the display memories composed of the four planes R, G, B and Z, the effects of the present invention do not concern the kinds or number of the planes of the display memories.

As set forth above, according to the present invention, in a character and graphics display system having display memories in a plane arrangement, character and graphics data with foreground colors and background colors designated are converted into data to be written into the display memories of respective planes and are written into them merely by the setting of color data in a register and the processing of writing graphics data. This brings forth the effect that the display processing of the character and graphics data is raised in speed, and the effect that the burden of software development can be relieved.

In addition, the present invention produces the effect that a character and graphics display circuit for a personal computer and a character and graphics display circuit for a videotex terminal can be made common, so the expansion of functions to other-character and graphics display systems can be flexibly coped with.

Claims:

1. A character and graphics display system having a plurality of display memories (12), display memory reading means (4) to read out character and graphics data written in the display memories, and picture signal conversion means (17R, 17B, 17G, 17Z; 19; 21) to convert the read-out data into picture signals, characterised in that said character and pat-tern display system comprises:

color data recording and holding means (13) to record and hold a plurality of sorts of color data of characters and graphics;

a plurality of decode circuits (31R, 31G, 31B, 31Z) which are disposed in correspondence with the respective display memories and which generate control signals corresponding to said display memories respectively on the basis of the plurality of sorts of color data stored in said color data recording and holding means; and

a plurality of graphics data conversion circuits (33R, 33G, 33B, 33Z) which, in response to the control signals delivered from the corresponding decode circuits, convert graphics data of the characters and graphics into data corresponding to said display memories respectively and write the converted graphics data into the- corresponding display memories respectively.

2.A character and graphics display system according to claim 1, characterised in that wherein :

said plurality of display memories are composed of a plurality of memory planes (12R, 12G, 12B) which represent different colors respectively, and a single memory plane-(12Z) which represent either of a top. intensity or a half intensity.

3.A character and graphics display system according to claim 1, characterised in that wherein:

the plurality of sorts of color data consist of foreground color designation for coloring a dot with a graphics data of "1", and background color designation for coloring a dot with a graphics data of "0"; and

said plurality of decode circuits decode combinations of foreground color data and background color data respectively, so as to generate the control signals corresponding to the respective display memories.

4.A character and graphics display system according to claim 1, characterised in that wherein:

said plurality of display memories are composed of a plurality of memory planes (12R, 12G, 12B) which represent different colors respectively, and a single memory plane (12Z) which represent either of a top intensity or a half intensity;

the plurality of sorts of color data consist of foreground color designation for coloring a dot with a graphics data of "1", and background color designation for coloring a dot with a graphics data of "0";

said plurality of decode circuits decode combinations of foreground color data and background color data respectively, so as to generate the control signals corresponding to the respective memory planes; and

said plurality of graphics data conversion circuits respond to the control signals supplied thereto from the corresponding decode circuits respectively, to convert the graphics data into a plurality of sorts of data respectively representing the different colors and data representing either of the top intensity or the half intensity and to write the converted data into the corresponding memory planes.

5.A character and graphics display system according to claim 1 or 4, characterised in that wherein each of said plurality of graphics data conversion circuits comprises:

a controlled buffer (331) whose output is at a low level at all times;

a controlled buffer (332) whose output is at a high level at all times;

a controlled buffer (333) which delivers a received graphics data as it is; and

a controlled buffer (334) which delivers an inverted data of the received graphics data:

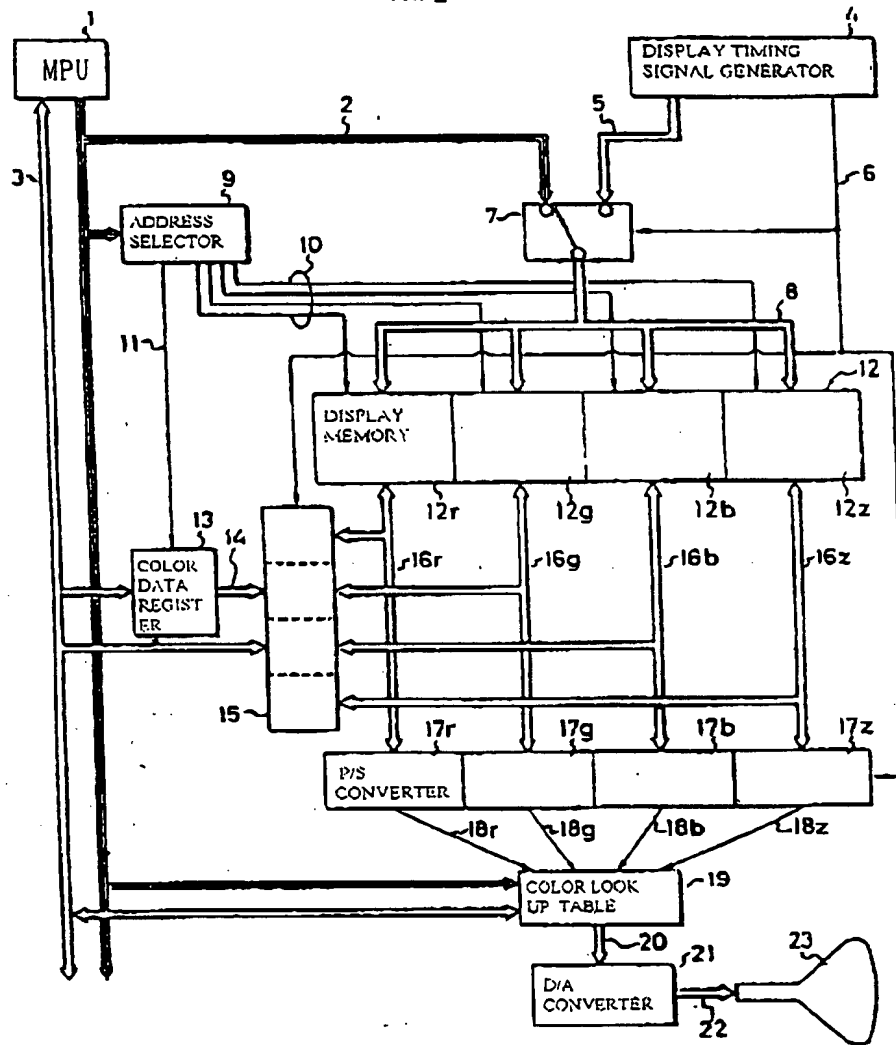
these controlled buffers being controlled so that the output of any of said controlled buffers may be selected and delivered in response to the control signal delivered from the corresponding decode circuit.

Abstract:

A character and graphics display system having display memories (12) composed of memory planes (12R, 12G, 12B) for storing red, green and blue data, comprises a color data register (13) in which foreground color and background color data are set, and a graphics data select and control circuit (15) which, in response to an output from the color data register (13), converts graphics data into data to be written into the memory planes (12R, 12G, 12B). In writing character and graphics data of designated foreground colors and background colors into the memory planes of red, green and blue, the processing is raised in speed.

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FIG 1



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FIG. 2

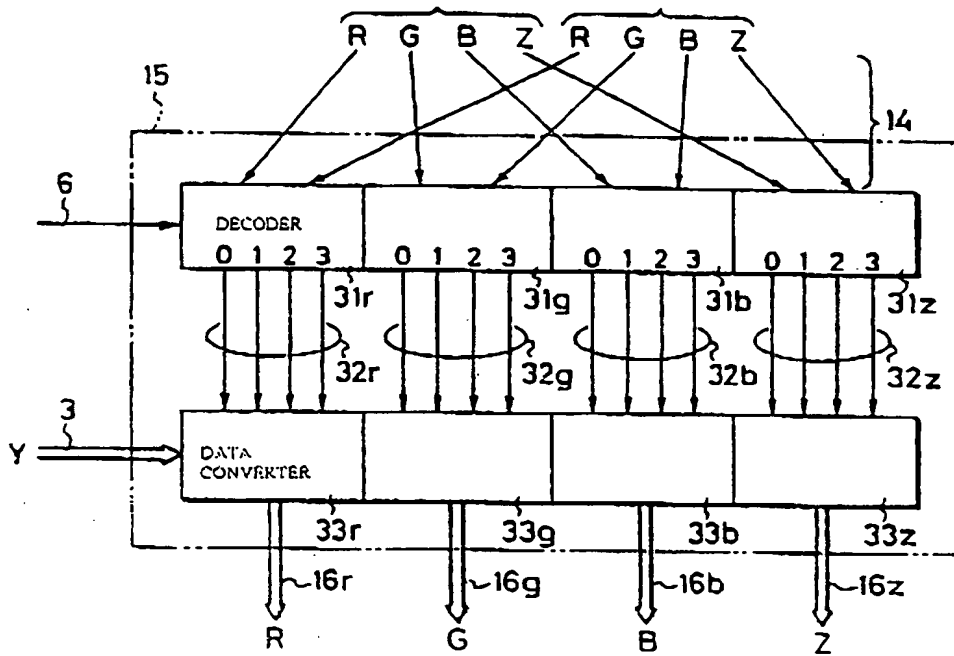
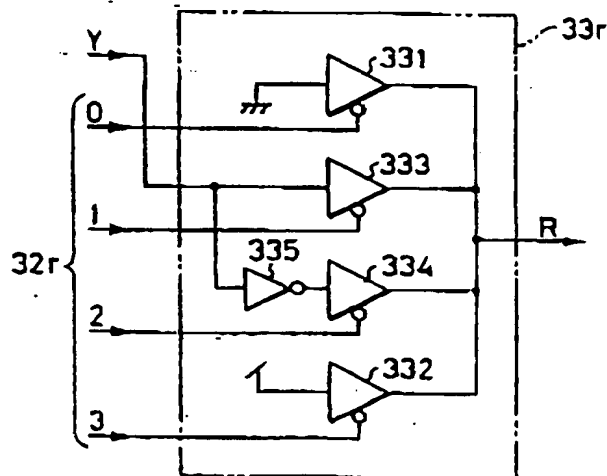


FIG. 3



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FIG. 4 A

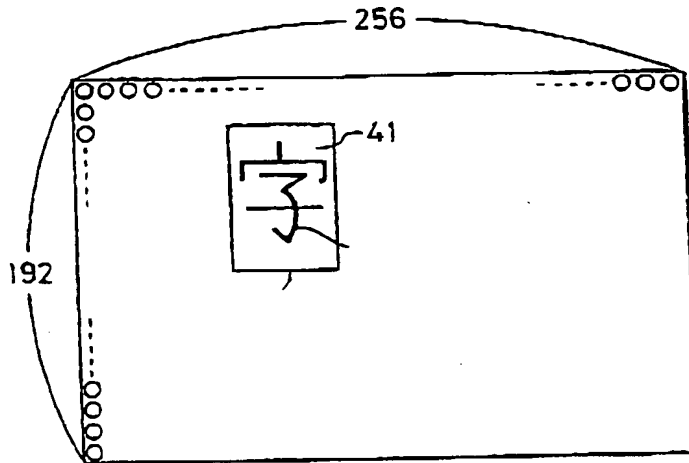
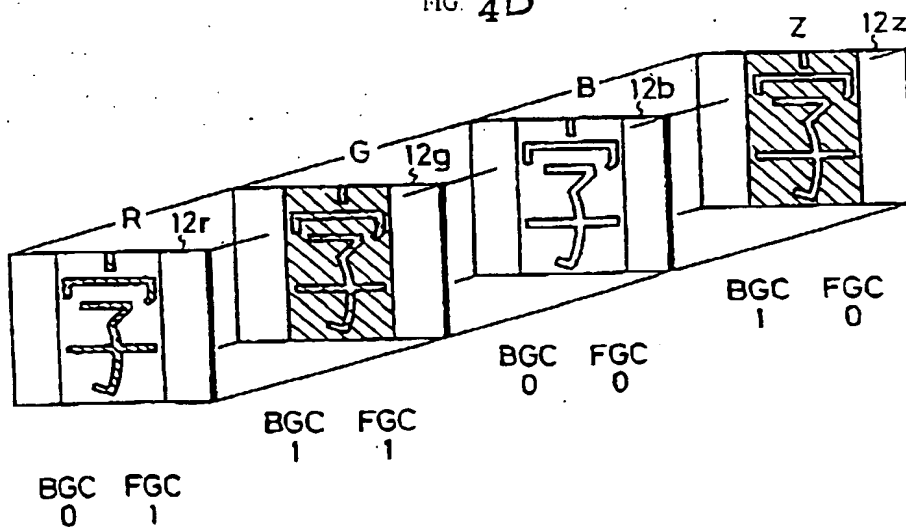


FIG. 4B



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(71) 申请人 株式会社日立制作所
地 址 日本东京
(72) 发明人 池田哲也

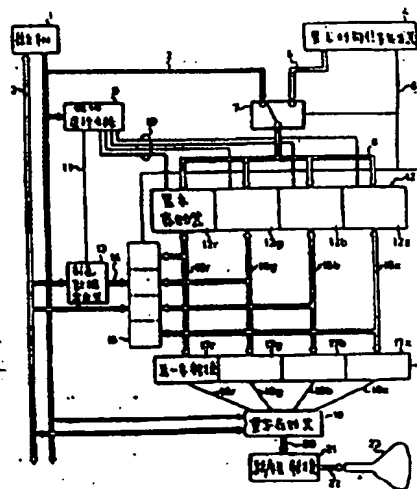
(74) 专利代理机构 中国专利代理有限公司
代理人 匡少波

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(57) 摘要

具有由存储平面(12R、12G、12B为储存红、绿和蓝色数据)组成的显示存储器(12)的字符和图形显示系统包含:彩色数据寄存器(13),其中设置前景和背景彩色数据;图形数据选择和控制电路,它响应来自彩色数据寄存器(13)的输出,将图形数据转换成可以写入存储平面(12R、12G、12B)的数据。

将标志前景和背景彩色的字符和图形数据写入红、绿和蓝色的存储平面,在写入过程中处理速度提高了。



881B00645/39-16

权 利 要 求 书

1. 字符和图形显示系统具有多元显示存储器(12), 显示存储器读出装置(4), 读出写入显示存储器的字符和图形数据, 图象信号转换装置(17R, 17G, 17B, 17Z, 19, 21), 将读出的数据转换成图象信号, 本发明其特征在于包括:

彩色数据记录 and 保持装置(13), 用于记录和保持字符和图形的各种彩色数据,

多元译码电路(31R, 31G, 31B, 31Z), 它的配置与对应的各个显示存储器相一致, 并且根据储存在彩色数据记录 and 保持装置中的多种彩色数据, 对应于上述各个显示存储器, 它产生控制信号。

多元图形数据转换电路(31R, 31G, 31B, 31Z), 它响应从相应译码电路传来的控制信号, 将字符和图形数据转换成对应各个显示存储器的数据, 并将转换的数据写入相应的各个显示存储器。

2. 根据权利要求1的字符和图形显示系统, 其特征在于:

上述多元显示存储器包括多元存储面(12R, 12G, 12B), 它分别代表各种不同颜色, 如红, 绿和兰; 以及单个存储面(12Z), 它或代表高强度或半强度。

3. 根据权利要求1的字符和图形显示系统, 其特征在于:

所述多种彩色数据包括用于着色打点的前景彩色标志, 它的图形数据为“1”, 和用于着色打点的背景彩色标志, 它的图形数据为“0”,

上述多元译码电路分别翻译前景和背景彩色的组合数据, 从而针对各个显示存储器产生控制信号。

4. 根据权利要求1的字符和图形显示系统, 其特征在于:

上述多元显示存储器包括多元存储面(12R, 12G, 12B), 它分别代表不同颜色, 如红, 绿和兰, 以及单个存储面(12Z)它或代表高强度或代表半强度;

多种彩色数据包括用于着色打点的前景彩色标志，它的图形数据为“1”和用于着色打点的背景彩色标志，它的图形数据为“0”；

上述多元译码电路分别翻译前景和背景彩色的组合数据，从而针对各个存储平面产生控制信号；

上述多元图形数据转换电路响应从相应译码电路来的控制信号，将图形数据转换成各代表不同颜色多种数据和代表或全强度或半强度的数据，并且将这些转换的数据写入相应的存储面。

5. 根据权利要求1或4的字符和图形显示系统，其特征在于：

每个上述多元图形数据转换电路包括：

可控缓冲寄存器(331)，它的输出总是低电位，

可控缓冲寄存器(332)，它的输出总是高电位，

可控缓冲寄存器(333)，它传送接收到的图形数据的原码，

可控缓冲寄存器(334)，它传递接收图形数据的反码，

这些可控缓冲寄存器受到控制，响应从相应译码电路来的控制信号，从而可以选择和传送任何上述可控缓冲寄存器的输出。

说明书

字符和图形显示系统

本发明是关于字符和图形显示系统，尤其是在如电传和电视电传的字符和图形信息系统中，即便于接收和显示处理的字符和图形显示系统。

例如，在用于个人计算机显示字符和图形的显示电路中，包含逐点着色的显示存储器的快速写入系统由三个存储器组成，分别用于显示三个基本颜色，红、绿和蓝，其中各个显示存储器备有彩色数据寄存器，为了同时将数据写入多元显示存储器，该系统揭示在日本专利申请的官方公报中，出版号№187996/1983（对应于欧洲专利申请出版号№0093954）。

但是，在具有高速写入系统的显示电路的个人计算机用作终端的情况下，（例如，实现显示的电视电传）将数据写入显示存储器的处理与具有图形数据存储器 and 彩色数据存储器的专用终端的显示电路的处理相比显得复杂些，因为字符和图形数据由与图形数据有关的部分和彩色数据部分组成，该彩色数据部分包括图形数据为“1”的前景彩色标志点和图形数据为“0”的背景彩色标志点。更准确地说，在使用以往显示电路的情况下，由于用于三个基本颜色中的每一个颜色（红、绿、蓝）的存储器平面布置，由图形数据和彩色数据组成字符和图形数据的写入需要两次显示处理操作，第一次为前景彩色数据写入，其中将前景彩色数据写入彩色数据存储器，随后将图形数据写入显示存储器，第二次为写入背景彩色数据，其中彩色数据寄存器的内容被再次写入背景彩色的彩色数据中，随后被转换图形数据获得的反图象数据以叠加方式被写入显示存储器，这导致一个问题，即需要一段长时间进行显示处理，因此

显示速度比在一显示存储器平面布置中的直接写入处理要低，该存储器的平面布置由图形数据存储器 and 彩色数据存储器构成在专用终端里。

本发明的目的是解决上述以往先有技术中的问题，提供一种字符和图形显示系统，它能提高由图形数据和彩色数据构成的字符和图形数据写入处理速度。

为了实现此目的，按照本发明，字符和图形显示系统具有多元显示存储器，显示存储读出装置，为了读出写入显示存储器的字符和图形数据，图象信号转换装置，将读出的数据转换成图象信号。该系统包括彩色数据记录 and 保持装置，为了记录 and 保持字符 and 图形的多种彩色数据，多元译码电路，它的配置对应于各个显示存储器，并且根据储存在彩色数据寄存 and 保持装置中的多种彩色数据，对应于上述各个显示存储器，它产生控制信号，以及多元图形数据转换电路，它响应从相应译码电路传来的控制信号，将字符 and 图形数据转换成对应各个显示存储器的数据，并将被转换的数据写入相应的各个显示存储器。

按照本发明，甚至在由红、绿、蓝等不同颜色的平面表示布置的显示存储器中（不同于由图形数据存储 and 彩色数据存储组成的显示存储器）带有前景彩色 and 背景彩色标志可以同时转换成将要写入对应平面的显示存储器中的数据，只不过要在彩色数据记录 and 保持装置中设置彩色数据，并处理写入图形数据，从而能实现加快写入显示存储器的速度。

在附图中：

图1 表示本发明的字符和图形显示系统的具体装置的方块图，

图2 是图1 中的图形数据选择 and 控制电路的详细方块图，

图3 是图2 中的数据转换电路实例的方块图，

图4 A and 4 B 是表示字符 and 图形显示的实例 and 写入显示寄存器的数据的实例。

现在详细说明本发明的具体装置。图1 是本发明的字符 and 图形显示

系统的具体装置的方块图。在图1中，号码1指明微处理机（往下，缩写为“MPU”）号码2和3分别指明地址和数据总线。号码4表示用于显示读出的显示时间信号发生器，号码5表示显示地址信号线，号码6表示显示周期信号线用于转换显示读出和MPU的存取，号码7表示地址转换电路，以及号码8表示转换后的地址信号线。号码9表示地址选择电路，显示存储器12由4片12R，12G，12B和12Z组成，号码13表示彩色数据寄存器，号码10和11表示被选择的信号线，用于显示存储器12和彩色数据寄存器13，号码14表示用于彩色数据寄存器13的输出数据的信号线，号码15表示图形数据选择和控制电路，符号16R，16G，16B和16Z分别表示用于将向显示存储器12G，12B和12Z写入数据及从该显示存储器读出数据的信号线，符号17R，17G，17B和17Z表示并/串转换器，它保持从显示存储器读出的数据并将它转换成串行数据（信号线18R，18G，18B和18Z）。号码19表示一可重写存储器，它的地址输入是串行数据，并且它被称为“彩色查寻表”（COLOR LOOK UP TABLE）。号码21表示D/A转换器，将从彩色查寻表19输出的数据（信号线20）转换成模拟RGB三种基本彩色信号（信号线22），号码23表明彩色阴极射线管。

图2是图1中的图形数据选择和控制电路15的详细方块图，符号31R，31G，31B和31Z表示编码电路。符号32R，32G，32B和32Z表示相应于各编码电路的编码输出信号线，符号33R，33G，33B和33Z表示数据转换电路，共计配置4部分。

现在说明图1和图2所示的字符和图形显示系统的工作。在图1的显示存储器12由4片，12R，12G，12B，12Z组成，它储存数据R，G和B代表红，绿，蓝以及数据Z，它表明强度峰值或半峰值，它们储存每幅字符和图形数据，每幅面包含横向256点和垂直方向192条线，如图4A所示。

作为字符和图形数据的例子，在图4 A上，显示中国字的字符41，它的前景是黄色，背景是淡绿。在类似电视传真的字符和图形数据系统中，常常传输本例中的包括前景和背景的彩色数据以及图形数据（在编码传输的情况下，图形数据来自字符图形只读存储器ROM），微机1配置在终端，用于发送和接收此类数据，它预先将“黄色”前景和“淡绿色”背景彩色寄入彩色数据寄存13，接着将中国字符41的图形数据写入显示存储器12。

彩色输出数据（信号线14）寄存在彩色数据寄存器13中，它是图形数据选择和控制电路15的输入，其中，在微机1的数据总线3上的图形数据被选择和控制（取决于前景和背景彩色数据的混合情况）。并变换成将写入显示存储12中相应的彩色数据面的数据，图形数据选择和控制电路15的电路结构表示在图2中，它由四个译码电路31 R，31 G，31 B和31 Z组成，每个翻译前景和背景彩色之间的组合二进制码（二比特），还包括数据转换电路33 R，33 G，33 B和33 Z，每个根据输出信号32 R，32 G，32 B和31 Z给出写入平面存储器的数据。四个译码电路31 R，31 G，31 B和31 Z翻译相应的前景和背景之间的组合二比特码，每个输出包含4比特，这些电路工作在显示读出周期期间，根据用于转换显示读出和微机存取的周期信号6，数据转换电路33 R，33 G，33 B和33 Z将在微机1的数据总线3上的图形数据信号转入四个数据组R，G，B和Z中相应的某一组，根据编码电路的输出信号32 R，32 G，32 B和32 Z，他们将被写入显示存储器12中相应的某一平面，图3示出每个转换电路33 R，33 G，33 B和33 Z的实际电路结构，并以电路33 R为例，它将数据总线3上的图形数据转换成可写入的数据，准备写入红色数据R的显示存储器12 R。此电路由4个可控制缓冲器和1个反相器组成。可控缓冲器331和332的输出总是低电位“0”和高电位“1”，可控缓冲器333传送输入信号Y。可控缓冲器334的输入端是反相器335，前

者输入端传送 Y 信号的反码 \bar{Y} 。这些缓冲器的控制终端都分别接到译码电路 31 R 的译码输出端 0, 1, 2, 3 根据译码电路 31 R 的译码结果, 终端 0, 1, 2 和 3 的某一个变成高电位“1”。控制终端已被提供高电位“1”的缓冲器的输出就成为数据转换电路 33 R 的输出信号 R。

电路 33 R 工作如下: 当译码电路 31 R 的译码输出 32 R 是“0”, 则写入的数据为“0”, 当前者是“1”, 则后者为总线上的数据, 当前者是“2”, 则后者成为总线上的数据的反码, 当前者是“3”, 则后者成为“1”。

表 1 列出可以写入的数据, 这些数据由图 3 的数据转换电路 33 R 转换数据总线 3 上的图形数据 Y 而后传出的, 这些数据对应着译码电路 31 R 的译码输出信号以及寄在彩色数据寄存器 13 中的前景和背景彩色的混合比特(二比特)。

表 1

前景 (FGC) 和背景 (BGC) 彩色之间的组合		译码电路 31 R 的输出信号	从转换图象数据 Y (0011 0110) 而写入的数据 (数据转换电路 33 R 的输出)
BGC	FGC		
0	0	0	00000000
0	1	1	00110110 (-Y)
1	0	2	11001001 (- \bar{Y})
1	1	3	11111111

其它数据转换电路 33 G, 33 B 和 33 Z 的结构与图 3 上电路 33 R 相同, 工作类似。

关于图 4 A 示出的例子, 由于前景颜色是黄, 背景是绿, 图形数据完整无缺地写入红色 (R) 平面的显示存储器 12 R 所有比特是“1”的

数据写入绿色 (G) 平面的显示存储器 12 G , 所有比特是 “ 0 ” 的数据写入绿色 (G) 平面的显示存储器 12 B , 以及图形数据的反码数据写入 “ Z ” 平面的显示存储器 12 Z , 如图 4 B 所示。

按照这种方式写入显示有存储器 12 的在平面单元上的字符图形数据, 根据从显示时间信号发生器 4 来的显示地址 (信号线 5) 可以被读出, 并且通过并 / 串转换电路 17 R , 17 G , 17 B 和 17 Z , 彩色查寻表 19 和数 / 模转换电路 21 , 转换成三个基本颜色的图象信号, 然后, 彩色显示管 C R T 23 能显示中国字符图形, 它的前景是黄色, 背景是绿色。

正如早已说明的, 根据本发明的具体装置, 即使在由红、绿、蓝平面组成的显示存储器中 (不同于由图形数据存储和彩色数据存储组成的显示存储器) 带有前景颜色和背景颜色标志的字符和图形数据^也可以同时转换成可以写入对应平面的显示存储器的数据, 只不过要在寄存器中设置彩色数据以及将图形数据写入显示存储器, 因此能实现加速写入显示存储器的速度。

尽管本发明的具体装置是针对包含由 4 种平面 R , G , B 和 Z 组成的显示存储器的情况, 本发明的要旨与显示存储器的平面种类和数量无关。正如前面已指出的, 根据本发明, 在具有平面结构的显示存储的字符和图形显示系统中, 带有前景和背景彩色标志的字符和图形数据被转换成可以写入相应平面的显示存储器的数据, 并且仅仅靠在寄存器中设置彩色数据和进行写入图形数据而写入进入各自的存储器平面。因之带来这样的效果—提高了字符和图形的数据的显示处理速度, 以及减轻软件开发的负担。

还有, 本发明的作用是: 用于个人计算机的字符和图形显示电路和用于电视电传终端的字符和图形显示电路可以做成共用的, 因此可以灵活地将本发明的作用扩大到其它字符和图形显示系统。

审定号 85 1 04361
 Int.Cl⁴ G06F 3/153
 审定公告日 1988年6月1日

图 1

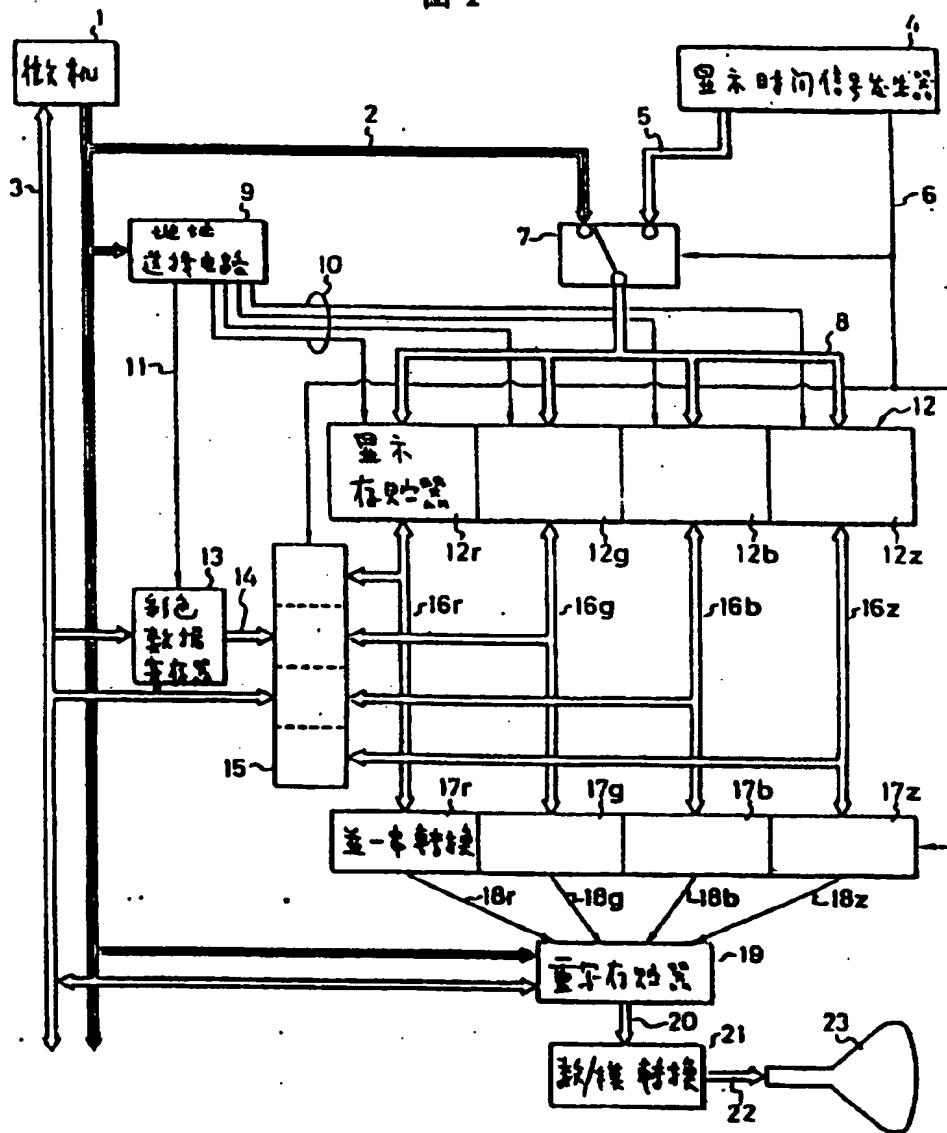


图 2

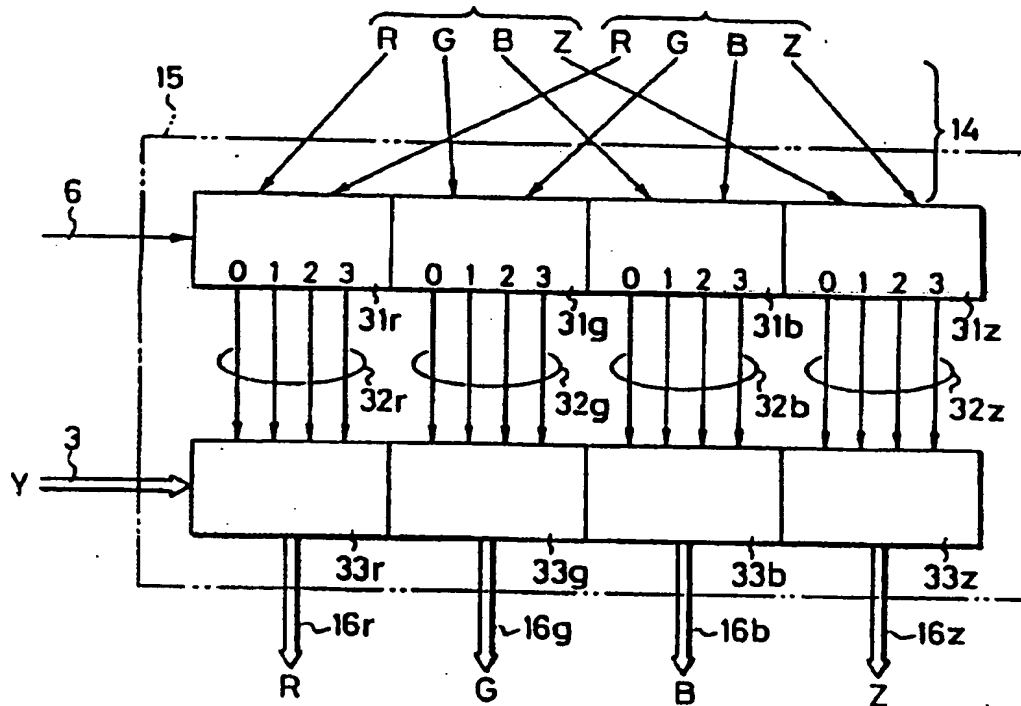
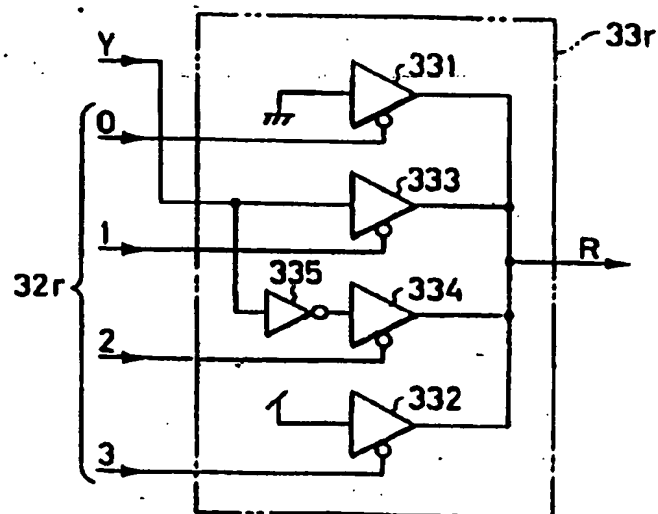


图 3



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 Int.Cl. G06F 3/153
 审定公告日 1988年6月1日

图 4 A

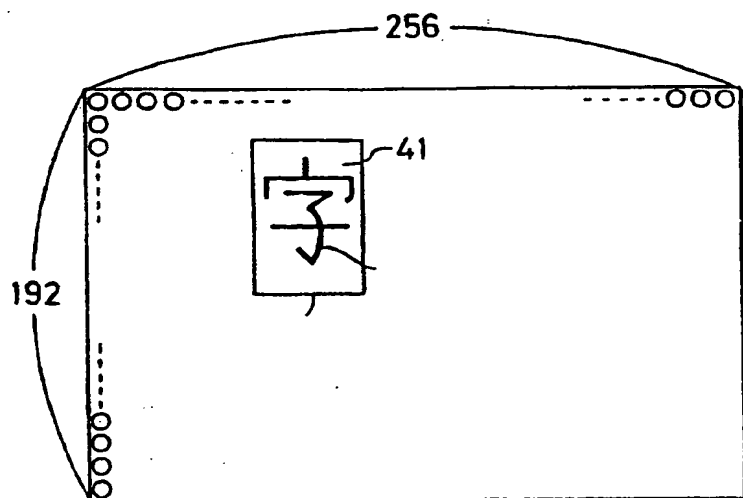
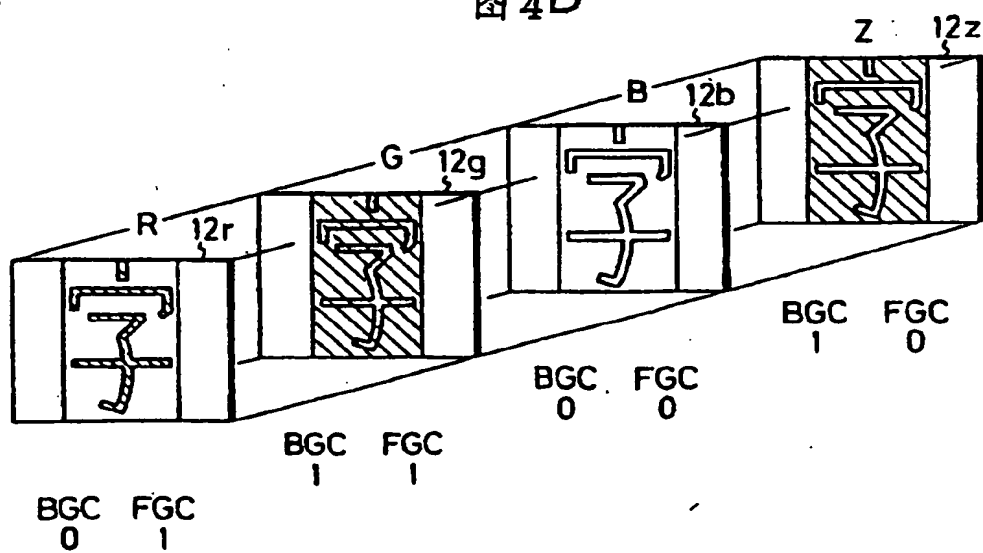


图 4B



Patent Office of the People's Republic of China

Address : Receiving Section of the Chinese Patent Office, No. 6 Tucheng Road West, Haidian District, Beijing. Postal code: 100088

Applicant	MITSUBISHI DENKI KABUSHIKI KAISHA			Seal of Examiner	Date of Issue
Agent	China Patent Agent (H.K.) Ltd.				April 4, 2003
Patent Application No.	01142585.7	Application Date	October 30, 2001	Exam Dept.	
Title of Invention	INFORMATION PROVIDER DEVICE, INFORMATION PROVIDER SYSTEM AND ADVERTISING METHOD				

First Office Action

1. ☒ Pursuant to the provision of Article 35 (1) of the Chinese Patent Law, the examiner made an examination as to substance of the captioned patent application for invention upon the request for substantive examination filed by the applicant.
- ☐ Pursuant to the provision of Article 35 (2) of the Chinese Patent Law, the Chinese Patent Office has decided to conduct on its own initiative an examination as to substance of the captioned patent application for invention.
2. ☒ The applicant requests taking the filing date, February 14, 2001, at the JP Patent Office, the filing date, _____, at the _____ Patent Office, the filing date, _____, at the _____ Patent Office as the priority date of the present application.
- ☒ A copy of the first filed patent application certified by the receiving organ of the initial country of filing has been submitted by the applicant.
- ☐ A copy of the first filed patent application certified by the receiving organ of the initial country of filing has not been submitted by the applicant. Pursuant to the provision of Article 30 of the Chinese Patent Law, no priority right shall be deemed to have been claimed.
3. ☐ The applicant filed amended application document(s) on _____ and _____.
- ☐ Examination has confirmed that _____ filed on _____ cannot be accepted, _____ filed on _____ cannot be accepted, as the above amendment(s) ☐ is/are not in conformity with the provision of Article 33 of the Chinese Patent Law.
- ☐ is/are not in conformity with the provision of Rule 51 of the Implementing Regulations of the Chinese Patent Law.
- ☐ For the specific reason that the amendment(s) cannot be accepted, see the text of the Office Action.

4. ☒ The examination is conducted in the light of the original application document(s)
☐ The examination is conducted in the light of the following application document(s):
in the original application documents submitted on the filing date:
Claim(s) _____, page(s) _____ of the description, Figure(s) _____
of the drawing(s); Claim(s) _____, page(s) _____ of the description,
Figure(s) _____ submitted on _____; Claim(s) _____, page(s) _____
of the description, Figure(s) _____ submitted on _____
☐ Abstract of the description submitted on _____.

5. ☐ The present Office Action has been prepared without a search having been conducted.
☒ The present Office Action has been prepared with a search having been conducted.
☒ The following reference document(s) is/are cited in this Office Action (its/their serial number(s) will, continue to be used throughout the examination procedure):

No.	Number or Title of Document	Date of Publication (or filing date of interfering application)
1	CN85104361B	(Date) February 4, 1987
2		(Date)
3		(Date)
4		
5		
6		

6. The concluding comments of the examiner are:

- ☐ On the description:
☐ The content of the application comes within the scope where no patent right is granted as provided in Article 5 of the Patent Law.
☐ The description is not in conformity with the provision of Article 26(3) of the Patent Law.
☐ The drafting of the description is not in conformity with the provision of Rule 18 of the Implementing Regulations.
☒ On the claims:
☒ Claim _____ 1-15 comes within the scope where no patent right is granted as provided in Article 25 of the Patent Law.
☐ Claim is not in conformity with the definition of invention in Rule 2(1) of the Implementing Regulations.
☐ Claim _____ does not possess novelty as provided in Article 22(2) of the Patent Law.
☐ Claim _____ does not possess inventiveness as provided in Article 22(3) of the Patent Law.
☐ Claim _____ does not possess practical applicability as provided in Article 22(4) of the Patent Law.
☐ Claim _____ is not in conformity with the provision of Article 26(4) of the Patent Law.
☐ Claim _____ is not in conformity with the provision of Article 31(1) of the Patent

Law.

- ☐ Claim _____ is not in conformity with the provisions of Rules 20-23 of the Implementing Regulations.
- ☐ Claim _____ is not in conformity with the provision of Article 9 of the Patent Law.
- ☐ Claim _____ is not in conformity of the provision of Rule 12(1) of the Implementing Regulations.

For specific analyses of the above concluding comments, see the text of this Office Action.

7. In view of the above concluding comments, the examiner holds that:

- ☐ The applicant should amend the application document in accordance with the requirements raised in the text of this Office Action. The amended document(s) should be submitted in duplicate and should conform to the provisions of Article 33 of the Patent Law and Rule 51 of the Implementing Regulations of the Chinese Patent Law.
- ☐ The applicant should expound in his Observations the reasons why the captioned patent application is patentable and amend the places not conforming to regulations as pointed out in the text of the Office Action, otherwise it would be impossible for the patent right to be granted.
- ☒ The captioned patent application contains no substantive content for which the patent right may be granted, thus if the applicant has not advanced his reasons or has not done so adequately, the application will be rejected.

8. The applicant should pay attention to the following matters:

- (1) In accordance with the provision of Article 37 of the Patent Law, the applicant should submit his/its Observations within **four** months from the date of receipt of this Office Action; if, without any justified reason, the time limit for making response is not met, the application will be deemed to have been withdrawn.
- (2) The amendments made by the applicant to his application should conform to the provision of Article 33 of the Patent Law, the amended text should be in duplicate and the format should conform to the relevant provisions of the Guidelines for Examination.
- (3) The applicant's Observations or amended text should be mailed or presented to the Receiving Section of the Chinese Patent Office. Document not mailed or presented to the Acceptance Section have no legal force.
- (4) Without making an appointment, the applicant and/or agent may not come to the Chinese Patent Office to hold an interview with the examiner.

9. This Office Action consists of the text portion totalling 2 page(s) and of the following annex(es):

- ☒ 1 duplicate copies of the reference document(s) cited totalling 12 page(s).
- ☐
- ☐

Text of the First Office Action

1. Claim 1 relates to an information provider device. Reference document 1 discloses a display system of character and graphics, including memory means for storing character and graphics and reading means for reading and outputting data from memory means. Thus, the only difference between the technical solutions of claim 1 and reference document 1 is the type of the data stored in and outputted from the memory means. However, the type of the data stored in memory means is decided by man. Therefore, the contributions of claim 1 to the prior art are rules and methods for mental activities, so fall within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.
2. The additional technical features of dependent claims 2 – 5 only further define the data in the memory means. For the same reason, claims 2 – 5 also fall within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.
3. Claim 6 relates to an information system, which comprises any information provider device stated in claims 1 – 5, and outputs the data in the memory means to the first information terminal connected with the network. Transmitting data to terminal through network is a piece of common knowledge. For the same reason as given in comment on claim 1, the contributions of claim 6 to the prior art are rules and methods for mental activities, and also fall within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.

4. The additional technical features of dependent claims 7 – 9 only further define the data in the memory means, and state that the information provider device and the first information terminal have electronic commerce function. However, electronic commerce is a piece of common knowledge. For the reason above, claims 7 – 9 also fall within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.
5. The additional technical features of claims 10 – 12 state that the terminal downloads data from information provider device, retrieves the stored data and provides a second information terminal to control the stored information. The art of transmitting data through network by means of provider device and terminal is commonly known to those ordinarily skilled in the art. For the same reason as given in comment on claim 6, the contributions of claims 10 – 12 to the prior art are rules and methods for mental activities, so fall within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.
6. Claim 13 relates to an advertising method, which uses the information provider device as stated in claim 1, with the feature defining the content stored in the memory means of the information provider device. For the same reason as given in comment on claim 1, the contributions of claim 13 to the prior art are rules and methods for mental activities, so fall within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.
7. The characterizing portion of claim 14 further defines the information in the memory means. For the reason above, claim 14 also falls within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.

8. The additional technical feature of claim 15 is that said advertisement using said information provider device is made by a third party, but this is not a technical measure. For the reason above, claim 15 also falls within the scope that should not be granted the patent right as provided in Article 25 of the Patent Law.

For the above reasons, claims 1 – 15 are not allowable. At the same time, the description does not carry any other substantive content eligible for a patent right, either. Even if the applicant recombines and/or further defines the claims according to the description, the application still does not have the prospect of being granted the patent right. The Examiner is considering rejecting the application according to the provision of Rule 53 of the Implementing Regulations of the Patent Law.



中华人民共和国国家知识产权局

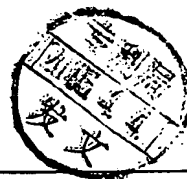
100032

中国专利代理(香港)有限公司 北京办事处

吴立明 王忠忠

申请号: 01142585.7

发文日期:



申请人: 三菱电机株式会社

发明名称: 信息提供装置、信息提供系统及广告方法

第一次审查意见通知书

0153207

1. ☒ 应申请人提出的实审请求, 根据专利法第 35 条第 1 款的规定, 国家知识产权局对上述发明专利中请进行实质审查。

☐ 根据专利法第 35 条第 2 款的规定, 国家知识产权局决定自行对上述发明专利申请进行审查。

2. ☒ 申请人要求以在:

日本 专利局的申请日 2001 年 2 月 14 日为优先权日,
专利局的申请日 年 月 日为优先权日,
专利局的申请日 年 月 日为优先权日,
专利局的申请日 年 月 日为优先权日,
专利局的申请日 年 月 日为优先权日。

吳

京办完成

☒ 申请人已经提交了经原申请国受理机关证明的第一次提出的在先申请文件的副本。

☐ 申请人尚未提交经原申请国受理机关证明的第一次提出的在先申请文件的副本, 根据专利法第 30 条的规定视为未提出优先权要求。

3. ☐ 申请人于 年 月 日和 年 月 日提交了修改文件。

经审查, 申请人于: 年 月 日提交的 不符合实施细则第 51 条的规定;
年 月 日提交的 不符合专利法第 33 条的规定;

4. 审查针对的申请文件:

☒ 原始申请文件。 ☐ 审查是针对下述申请文件的

申请日提交的原始申请文件的权利要求第 项、说明书第 页、附图第 页;
年 月 日提交的权利要求第 项、说明书第 页、附图第 页;
年 月 日提交的权利要求第 项、说明书第 页、附图第 页;
年 月 日提交的权利要求第 项、说明书第 页、附图第 页;
年 月 日提交的说明书摘要, 年 月 日提交的摘要附图。

5. ☐ 本通知书是在未进行检索的情况下作出的。

☒ 本通知书是在进行了检索的情况下作出的。

☒ 本通知书引用下述对比文献(其编号在今后的审查过程中继续沿用):



19 AUG 2003

21301
2002.1



回函请寄: 100088 北京市海淀区蓟门桥西土城路 6 号 国家知识产权局专利局受理处收
(注: 凡寄给审查员个人的信函不具有法律效力)



中华人民共和国国家知识产权局

编号	文件号或名称	公开日期 (或抵触申请的申请日)
1	CN85104361B	1987 年 2 月 4 日
2		年 月 日
3		年 月 日
4		年 月 日

6. 审查的结论性意见:

☐ 关于说明书:

- ☐ 申请的内容属于专利法第 5 条规定的不授予专利权的范围。
- ☐ 说明书不符合专利法第 26 条第 3 款的规定。
- ☐ 说明书不符合专利法第 33 条的规定。
- ☐ 说明书的撰写不符合实施细则第 18 条的规定。

☒ 关于权利要求书:

- ☐ 权利要求 不具备专利法第 22 条第 2 款规定的新颖性。
- ☐ 权利要求 不具备专利法第 22 条第 3 款规定的创造性。
- ☐ 权利要求 不具备专利法第 22 条第 4 款规定的实用性。
- ☒ 权利要求 1-15 属于专利法第 25 条规定的不授予专利权的范围。
- ☐ 权利要求 不符合专利法第 26 条第 4 款的规定。
- ☐ 权利要求 不符合专利法第 31 条第 1 款的规定。
- ☐ 权利要求 不符合专利法第 33 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 2 条第 1 款关于发明的定义。
- ☐ 权利要求 不符合专利法实施细则第 13 条第 1 款的规定。
- ☐ 权利要求 不符合专利法实施细则第 20 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 21 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 22 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 23 条的规定。

上述结论性意见的具体分析见本通知书的正文部分。

7. 基于上述结论性意见, 审查员认为:

- ☐ 申请人应按照通知书正文部分提出的要求, 对申请文件进行修改。
- ☐ 申请人应在意见陈述书中论述其专利申请可以被授予专利权的理由, 并对通知书正文部分中指出的不符合规定之处进行修改, 否则将不能授予专利权。
- ☒ 专利申请中没有可以被授予专利权的实质性内容, 如果申请人没有陈述理由或者陈述理由不充分, 其申请将被驳回。

8. 申请人应注意下述事项:

- (1) 根据专利法第 37 条的规定, 申请人应在收到本通知书之日起的璧个月内陈述意见, 如果申请人无正当理由逾期不答复, 其申请将被视为撤回。
- (2) 申请人对其申请的修改应符合专利法第 33 条的规定, 修改文本应一式两份, 其格式应符合审查指南的有关规定。
- (3) 申请人的意见陈述书和/或修改文本应邮寄或递交国家知识产权局专利局受理处, 凡未邮寄或递交给受理处的文件不具备法律效力。
- (4) 未经预约, 申请人和/或代理人不得前来国家知识产权局专利局与审查员举行会晤。

9. 本通知书正文部分共有 2 页, 并附有下列附件:

☒ 引用的对比文件的复印件共 1 份 12 页。



审查员 9334

审查部门 9

2003 年 3 月 21 日

21301
2002.1



回函请寄: 100088 北京市海淀区蓟门桥西土城路 6 号 国家知识产权局专利局受理处收
(注: 凡寄给审查员个人的信函不具有法律效力)

第一次审查意见通知书正文

1. 权利要求 1 涉及一种信息提供装置。对比文件 1 公开了一种字符和图形显示系统，其中包括存储字符和图形的存储器和从存储器中读出数据并输出的读出装置。由此可见，对比文件 1 与权利要求 1 中的技术方案的区别仅在于其存储器中存储的以及输出的数据类型不同。而在存储器中存储何种数据，这只是人为的规定。因此，权利要求 1 对于现有技术的贡献仅仅在于属于智力活动的规则和方法的部分，属于专利法第 25 条不授予专利权的范围。
2. 从属权利要求 2-5 的附加技术特征仅为对存储器中的数据进行进一步限定，因此，根据上述理由，权利要求 2-5 也同样属于专利法第 25 条不授予专利权的范围。
3. 权利要求 6 涉及一种信息系统，该系统中包括权利要求 1-5 中任一记载的信息提供装置，并且将存储器中的数据输出到网络连接的第 1 信息终端。通过网络传送数据至终端，这已是公知的技术。因此，根据评述权利要求 1 的理由可知，权利要求 6 也同样对于现有技术的贡献仅仅在于属于智力活动的规则和方法的部分，属于专利法第 25 条不授予专利权的范围。
4. 从属权利要求 7-9 的附加技术特征仅为对存储器中的数据进行进一步限定，并限定了信息提供装置和第 1 信息终端具有电子商务交易功能，而电子商务技术已是公知技术，因此，根据上述理由，权利要求 7-9 也同样属于专利法第 25 条不授予专利权的范围。
5. 权利要求 10-12 的附加技术特征部分所述的终端从信息提供装置下载数据、对存储的数据进行检索以及提供第 2 信息终端对存储的信息进行控制，这些利用网络使信息提供装置和终端进行数据传送的技术，对本领域技术人员来说都是常见的方法。因此，根据评述权利要求 6 的理由可知，权利要求 10-12 也同样对于现有技术的贡献仅仅在于属于智力活动的规则和方法的部分，属于专利法第 25 条不授予专利权的范围。
6. 权利要求 13 涉及一种广告方法，该方法使用权利要求 1 所述的信息提供装置，其特征规定了信息提供装置的存储器存储的内容。因此，根据评述权利要求 1 的理由可知，权利要求 13 也同样对于现有技术的贡献仅仅在于属于智力活动的规则和方法的部分，属于专利法第 25 条不授予专利权的范围。
7. 权利要求 14 的限定部分对存储器中的信息做了进一步限定，因此，根据上述理

由，权利要求 14 也同样属于专利法第 25 条不授予专利权的范围。

8. 权利要求 15 的附加技术特征为可由第三者代理使用信息提供装置进行广告，并不是技术手段，因此，根据上述理由，权利要求 15 也同样属于专利法第 25 条不授予专利权的范围。

基于上述理由，当前权利要求 1-15 不能被允许，同时说明书中也没有记载其他任何可以授予专利权的实质性内容，因而即使申请人对权利要求进行重新组合和 / 或根据说明书记载的内容作进一步的限定，本申请也不具备被授予专利权的前景，审查员拟根据专利法实施细则第 53 条的规定驳回该申请。